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Heat is a form of energy that moves from one object to another as a result of a difference in temperature. It usually moves from a hot object to a cooler object. The cooler object absorbs this energy and becomes warmer.



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Ordinary matter is made of atoms and molecules, which are always in motion. As the molecules in an object move faster, the heat energy in the object grows. As the heat of the object increases, so does the temperature. A cold object holds little heat and has a low temperature. A hot object holds much heat and has a high temperature. However, a large cold object may hold more heat than a small hot object.

Heat moves in three different ways—conduction, convection, and radiation. Conduction moves heat from one object directly to another object. For example, the heat from a rock warmed by the sun will warm the animal sitting on top of it. Convection transfers heat by the movement of a liquid or gas. The boiling of water in a tea kettle is an example of convection. As the water molecules are heated, they rise and spread heat through the liquid. Radiation is the movement of heat through space in the form of waves. It allows heat to be transferred between objects that are not in direct contact. The sun radiates heat, as do living human bodies.

Radiation from the sun provides the Earth with most of its heat. In fuels such as coal, oil, gas, and wood, heat from the sun is stored, sometimes for millions of years. These fuels can be burned as direct sources of heat. They can also be used to generate **electricity**, a source of heat that can be carried long distances through wires. The Earth's interior and nuclear reactions are other sources of heat.

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